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Exploring Serigraphy

CHESTER J. ALKEMA

Serigraphy is an age-old printing process of Chinese and Japanese origin in which a semi-liquid pigment is pressed with a squeegee through a fine-mesh “silk” (polyester) screen to form the given design upon any desired surface by means of a stencil (one stencil for each color). The stencil may be painted on the screen with tusche and glue, cold wax, LePage’s glue, or cut out of an impervious material like paper taped to the screen. The stencil may also be photographically reproduced on a screen impregnated with a light-sensitive emulsion. In distinction from “silk-screen printing,” which is a commercially used process for the purpose of reproduction, serigraphy implies that the artist creates an original print after his own design.

Serigraphy, as a fine arts medium, had intrigued me for many years. Until very recently, water-based inks have proved quite ineffective in that the screen tended to clog while printing. Bleeding was inevitable. And opaque colors were impossible to achieve. The toxic odors emanating from the oil-based inks and cleaning fluids rendered them unusable in the elementary and secondary classroom, as recent legislation prohibited their use where effective exhaust systems were unavailable. This proved unfortunate as serigraphy is the one printing technique most applicable to the elementary and secondary classroom in that it does not require expensive printing presses, heavy stones, and other impractical equipment and supplies.

During a sabbatical last year, I first explored the water-based inks produced by Harco Graphic Products, Inc. Colors were available in pint-sized containers and consisted of a ready-mixed, jelly-like substance. A jelly-like thinner, when added, produced a more transparent color. Unfortunately, no relating product was available to create opaque colors. I considered this a major drawback and quickly ended my exploration of these inks in favor of products from Color Craft. Unlike the Harco products, Color Craft’s inks mixed by adding intense liquid pigments to a white, creamy base resembling Elmer’s glue, called “Lyntex.” Another white base called “Super Print Base” is available for mixing a less runny ink. And a substance called Gouache Medium permits the creation of opaque colors. Color Craft’s inks have an acrylic base. I know of only one other company, Hunt Speedball, which manufactures a similar ink. With practice, Color Craft’s inks produce results virtually indistinguishable from those achieved with oil-based inks.

In pursuing my research, I wanted to experiment with every type of printing paper available to determine what might be suitable and affordable on the elementary, secondary, college, university, and professional levels. I explored the use of such papers as Strathmore Series 400, Rising Fine Art Paper, Gallery 100 Litho/Screen

paper, Fabriano Tiepolo 100% Rag Printing Paper, Fabriano Rosaspina Etching Paper with 60% rag, student grade 80 lb. paper, student grade 100 lb. paper, professional grade 50 lb. and 100 lb. very white paper.

I chose Student Grade 80 lb. paper in 100 sheet packs, available in 14"x17" and 18"x24" averaging \$.22 each, as being acceptable for the later elementary and secondary classroom. Professional Grade 50 lb., 100% rag, 22"x 30", average \$.84 per sheet, was selected for the beginning college and university students. Beinfeld Screen Print Paper, 22" x 30", \$1.86 per sheet, proved to be the highest quality available and I would recommend this for professional, as well as advanced college and university students. The majority of my prints employed this excellent paper.

I chose number 220 as my monofilament ("silk screen," now made of polyester). Methods for attaching the screen to the wooden frame are similar to those used when employing oil-based inks, with this exception: polyurethane can be used to coat the wooden frame (making it waterproof) and to provide the screen with a border, replacing the paper tape and shellac normally used with oil-based inks. The squeegee should be somewhat softer when using water-based inks and I chose a derometer of 60, identifiable by its blue color.

I began my exploration of serigraphy by cutting (hard edge) and tearing (soft edge) newsprint paper-shapes which were taped to the underside of the screen. This approach encourages an unplanned, spontaneous, method for designing, as well as ample opportunity to explore the use of water-based inks, to determine how much pure pigment should be added to the printing base for a given intensity, to learn how much gouache is needed for a truly opaque color, and to learn the color effects achieved as transparent colors are overlaid.

Theoretically, clear contact paper should provide an excellent stencil. Positive shapes are created by cutting areas off the contact paper's backing. The non-removed shapes are pulled from the backing and applied to the underside of the screen, creating negative shapes when printing. Frequently, when being adhered to the screen, the contact paper would accidentally stick to itself, like sticky fly-paper. Out of frustration, I quickly discarded this material.

Tracing paper proved to be an ideal material for creating stencils. Using an X-acto knife and/or razor blade, positive shapes are cut from the paper. When printing, the resulting shapes' contours are sharp and crisp. The paper easily endured the printing of editions numbering 20 without becoming waterlogged. I created a number of prints exclusively using tracing paper for each color run.

In using water-based inks, cold liquid wax replaces the LePage's glue generally used with oil-based inks. The "miracle" contents of this product from Color Craft are undisclosed by the company. It looks like melted wax and feels like melted wax. But it is cold and water soluble. It is thinned by adding water.

My first experience with this medium resulted in applying the wax too thickly, creating a three-dimensional pile-up. These raised portions pushed parts of the squeegee away from the screen, causing ink to print unevenly. I discovered that the

wax could be greatly thinned with water and still provide a closed, opaque stencil. I also discovered that the addition of the blue pure pigment, when added to the wax-and-water medium, enabled my designs to be more discernible on the screen. Later, I added black pigment, instead of blue, and this further reduced the eye strain.

Soon, I began combining cold liquid wax stencils with cut tracing paper stencils and this combination provided my favorite approach to designing. Usually, my first inking consisted of opaque color, low in value, printed over a cold wax stencil. Later color runs sometimes combined tracing paper stencils and cold liquid wax. Cold liquid wax provided a more painterly effect compared to designs using paper stencils exclusively.

There are two light-sensitive approaches to creating stencils, one of which I explored briefly. A stencil is cut from a shiny, cellophane, red-colored material called Rubylift. The red remaining shapes (not cut away from the transparent backing) produce the positive forms when printing. The second approach requires a photographic process. A black-and-white, pen-and-ink design is created. The design is then photographed and processed by a firm such as Veenstra Graphics, Grand Rapids. The stencil, photographically developed from the drawing, may be reproduced in the identical size (100%) or made larger or smaller. The first photograph creates a stencil in reverse. An identical replica of the drawing necessitates that a photograph be taken of the photograph, to reverse the reversed design.

Both light-sensitive approaches listed above require that an emulsion be coated twice upon the underside of the screen, using the edge of a 4-ply matt board as a squeegee, or plexiglass sanded smooth on the stroke edge. The emulsion is applied in a light-controlled room having a bug light, or a light source covered with Rubylift. The Rubylift stencil, or the photographically-processed stencil, is applied to the emulsion-covered underside of the screen.

The screen preparation process and the printing process takes place as follows:

1. Degrease the screen, using #23 screen degreaser.
Using a scrub brush, degrease by scrubbing the printside of the screen.
2. In a dark room, add the emulsion. Two coats on the print side, one clean run on the top side.
3. Add the Rubylift stencil, or the photographically processed stencil to the print side of the screen.
4. Expose the screen to quartz light from 10 to 20 minutes, employing an 18" clearance.
5. Print.
6. Remove stencil. Use sponge, rubber gloves and reclaimer (Ulano #4).
7. Dry.
8. Degrease.
9. Use reclaimer to wash emulsion off the screen.

The following layers are arranged from the top downward during the light exposure process:

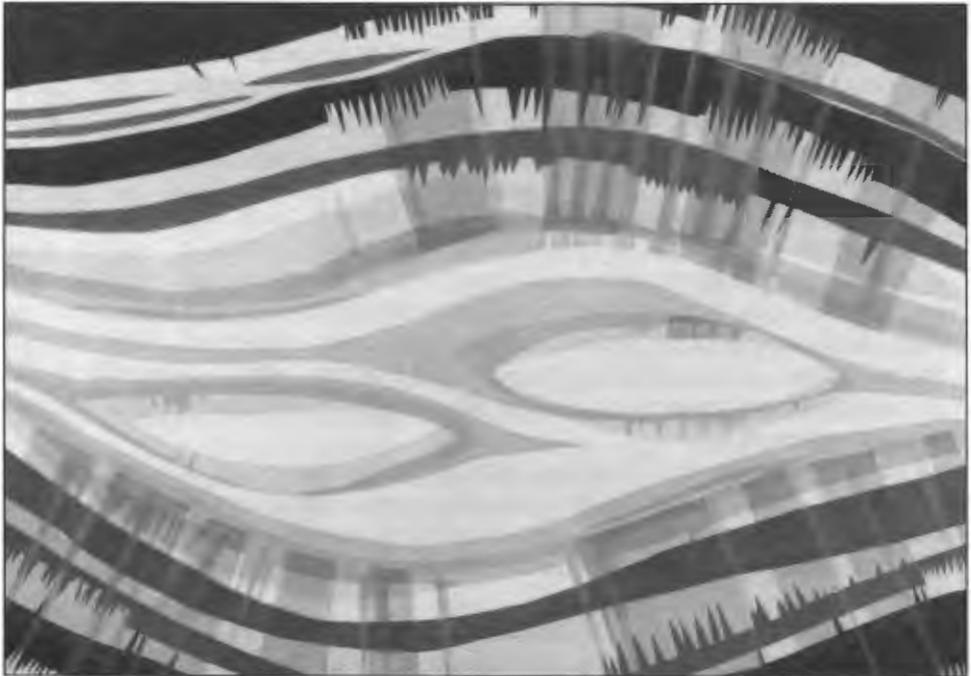
1. glass (top)
2. film (Rubylift)
3. screen, print side (under side) up
4. black paper
5. foam rubber

Both light-sensitive processes add time and expense to the serigraphic printing process. I view both processes as being more advantageous to the commercial employment of silk screen printing. Virtually identical results can be obtained with cold liquid wax, in less time, involving less expense.

When applying for my sabbatical, I had a few ideas in mind regarding subject matter and themes. I first explored the technique by rendering ballet figures—which expressed rhythmic, slow action as if a camera had photographed overlapping figures in slow motion—but felt somewhat detached from this and other themes. The thought-feeling process lacked profundity, spontaneity, depth. I felt distracted by the mechanics of the printing process while learning how to print effectively. How to mix the ink ingredients for a given effect? How to combine colors and overlays to produce given results?

Having little sense of direction, I finally hit upon the idea of interpreting a stage of the world as recorded in the book of Genesis. Upon reading this account, I was surprised by the many mental pictures that came to me as I read God's sequential plan in creating the world. The theme seemed so right, I soon began sketching ideas.

Upon completion of my sabbatical, I created 17 prints depicting stages of this theme, some stages having more than one version. Each print displays five to ten color overlays. After completing these themes, I also wanted to reveal God's rhythmic, predictable, and anticipated handiwork as evidenced in the four seasons, revealing how seasonal changes affect God's creation. To do this, I chose the tree (of life) as my theme, and set it in a consistent landscape, revealing different color, texture, and landscape contrasts according to seasonal changes.



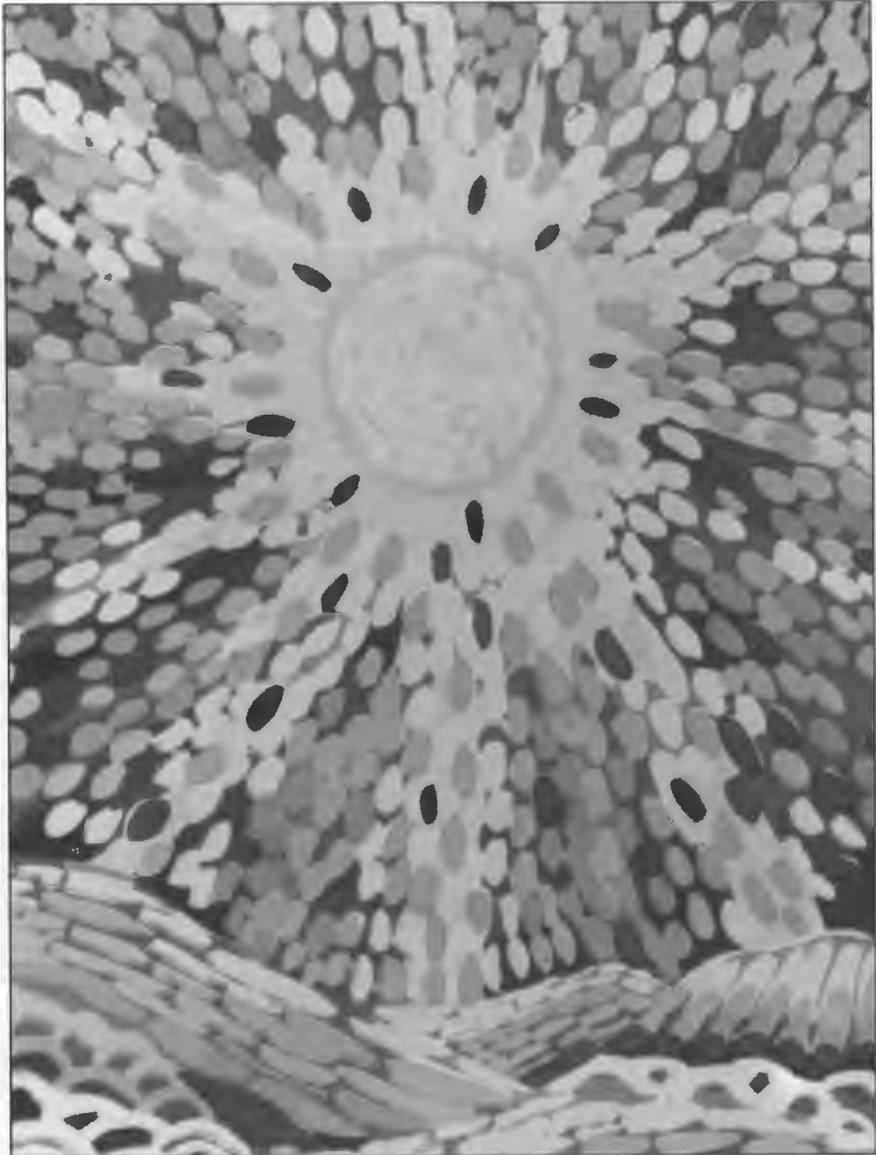
Division: Light From Darkness, Day From Night



Division: Earth and Seas



Creation of the Fruit Tree Yielding After His Kind



Creation of the Sun



Creation of the Stars



Creation of the Whales and Fish



Creation: Fowls of the Firmament



Creation: Fowls of the Firmament



Creation of Man and Woman: The River of Life



The Four Seasons—Spring



The Four Seasons—Summer



The Four Seasons—Fall



The Four Seasons—Winter

**IN the beginning God created the heaven and the earth.
And the earth was without form, and void; and darkness was upon the face
of the deep . . .**

Division: Light From Darkness, Day From Night, Genesis 1:3, 4b, 5.

And God said, Let there be light: and there was light.

. . . And God divided the light from darkness.

And God called the light Day, and the darkness he called Night.

Division: Earth From Sea, Genesis 1:10a and b.

And God said, Let waters under the heaven be gathered together under one place, and let the dry land appear; and it was so.

And God called the dry land earth; and the gathering together of the waters called he Seas.

Creation of the Fruit Tree Yielding After His Kind, Genesis 1:11.

And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself.

Creation of the Sun, Genesis 1:16b.

And God made two great lights; the greater light to rule the day . . .

Creation of the Stars, Genesis 1:16b, 17.

. . . And the lesser light to rule the night; he made the stars also.

And God set them in the firmament of the heaven to give light upon the earth.

Creation of the Whales and Fish, Genesis 1:20a.

And God said, Let the waters bring forth abundantly the moving creature that hath life . . .

Creation: Fowls of the Firmament, Genesis 1:20b.

. . . and fowl that fly above the earth in the open firmament of heaven.

Creation of Man and Woman: The River of Life, Genesis 1:26, 27.

. . . And God said, Let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the fowl of the air.

. . . In the image of God created he him; male and female created them.

The Four Seasons—Spring, Summer, Fall, and Winter, Genesis 8:22 & Ecclesiastes 3:1.

While the earth remaineth, seedtime and harvest, and cold and heat, and summer and winter, and day and night shall not cease.

To everything there is a season, and a time to every purpose under the heaven.